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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,238	01/23/2007	Hartmut Vogel	VOGEL	5351

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EXAMINER	
NGUYEN, TRAN N	
ART UNIT	PAPER NUMBER
2834	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,238	VOGEL, HARTMUT	
	Examiner	Art Unit	
	Tran N. Nguyen	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,11,12 and 14-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,11,12 and 14-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/210/6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **the opening which is located in a radially inner region of the at least one axial slot** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, "the opening which is located in a radially inner region of the at least one axial slot" is indefinite because claim 3 depends from claim 1, and claim 1 recites that at least one of axial slots has an open slot portion, wherein the opening is located in a radially outer region of thereof. Claim 3 can just simple change the location of the opening from radially outer region to radially inner region of the at least one axial slot. Dependent claim 3 does not further limit the limitations of independent claim 1, but rather raise an indefinite issue whether the opening is located at radially inner region or radially outer region or should there is at least one opening located in the radially outer region and there is at least another additional opening located in the radially inner region.

In light of the specification, for the recitations of claims 1 and 3 regarding the location of the opening is understood as at least one axial slot having an opening region wherein said opening region is located either at radially outer region or radially inner region thereof.

In claim 14, "the axial slot has a parallel-shaped cross section" is indefinite because "parallel" defined as two lines or to side being side by side, a slot cross section is not made up of only two lines or only two sides.

In light of spec, the above recitation is understood as "parallelogram-shaped cross section".

The following applied art rejections in this Office Action based on the above Examiner's interpretations, in light of spec., for the indefinite issues addressed herein this 35 U.S.C. 112, second paragraph rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claim 1, 5-8, 12 and 15-16, 18, 21** are rejected under 35 U.S.C. 102(b) as anticipated by **Crowell (US 5990595)**.

Regarding claim 1, **Crowell** discloses a squirrel-cage rotor (figs 1-2 and 5-7 and col. 5 lines 33+) comprising:

squirrel-cage rotor conductors (118);

a cage ring (120, 122) for shorting the squirrel-cage rotor conductor, and

a carrier (102) for support of the squirrel-cage rotor conductors, the carrier being provided with axial slots (116) for accommodating the squirrel-cage rotor conductors, wherein at least one of the axial slots (116) has at least one closed slot portion (110) and an open slot portion (112, 114), with the open slot portion located between the closed slot portion and the cage ring (figs 6-7), and with the open slot portion having an opening which is located in a radially outer region of the at least one axial slot (col. 6 lines 40+); wherein,

Regarding claim 5, each of the squirrel-cage rotor conductors is a cast squirrel-cage rotor conductor;

Regarding claim 6, each of the squirrel-cage rotor conductors is a bar conductors;

Regarding claim 7, the carrier is disposed immediately adjacent to the cage ring (figs 5-7);

Regarding claim 8, the carrier includes soft-magnetic material;

Regarding claims 15 and 18, Crowell also discloses (col. 6 lines 30+) a method of making a squirrel-cage rotor, comprising the steps of accommodating, i.e., casting, a squirrel-cage rotor conductor in a closed axial slot of a carrier; and removing material from the carrier in

the area of an end surface of the carrier to form an open slot portion with an opening which is located in a radially outer region of the axial slot; wherein,

Regarding claim 16, the accommodating step includes the step of casting the squirrel-cage rotor conductors in the closed slots of the carrier;

Regarding claim 12, the casting step includes the step of casting cage rings jointly with the squirrel-cage rotor conductors (col. 6 lines 33+);

Regarding claim 21, making the carrier of soft magnetic material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Crowell (US 5990595)**.

Crowell discloses the claimed squirrel-cage rotor, except for the added limitations in claim 3.

The **Crowell** important teaching is to provide the axial slot with an opening region to release mechanical stress therein, i.e., the rotor bars are not constraining in the radial direction at the end region of the carrier in order to release stress therein. This essential teaching would have been obvious to an artisan with necessary mechanical skills to applying the same concept with reverse position of the axial slot's opening to be radially inner region instead of radially outer region. This would be based upon the position of the rotor with respect a stator in a motor in order to effectively provide means to unconstraint the end of the rotor bar in radial direction.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the rotor by reversely providing the axial slot's opening to be radially inner region. Doing so would effectively provide means to unconstraint the end of the rotor bar in inwardly radial direction to release stress therein. Such rearranging part of an invention involves only routine skill in the art (*In re Japikse, 86 USPQ 70)* since one of ordinary skill in the art would have the necessary mechanical skill to make simple reversals of positions of mechanical parts without an express teaching in a reference (*In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).*

3. **Claims 4, 14, 17 and 19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Crowell**, as applied in the rejection against the base claim, in view of **Steen (US 4139790)**.

Crowell discloses the claimed invention, except for the added limitations of claims 4, 14, 17 and 19-20.

Steen, however, teaches that for the purpose of providing a squirrel-cage rotor with improved efficiency, the rotor having conductor bars (33) inserted into the slots, wherein the conductor bars and slots having wedge-shape (figs 4) that is substantially parallelogram-shaped cross section. Steen also discloses that squirrel-cage rotor can be either:

having individually formed conductor bars that being inserted into the axial slots and cage ring placed immediately adjacent to the carrier for a short circuiting;

or,

a conductive castably material such as aluminum material can be cast into the slot's interior with cast cage ring immediately adjacent to the carrier for a short circuiting.

Those skilled in the art would understand that either inserting individually formed conductor bar into axial slot or casting conductive material into the axial slot's interior to form conductor therewithin the axial slot, both are well known in the art based upon the configuration of the slots that accommodate the conductors. If the slot's configuration is simple then inserting conductor bar would be a suitable practice. If the slot's configuration is more complex then casting conductive material therein to ensure the slot's interior is filled with cast conductor material would be a suitable practice.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the rotor by configuring the rotor slot's configuration and the conductor bars with wedge-shape, or parallelogram-shaped cross section, with such simple configuration individually formed conductor bars can be inserted into the slots. Doing so would simplify the manufacturing process while provide a motor with improve efficiency.

4. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Crowell**, as applied in the rejection against the base claim, in view of **Kajiwara Kenzo et al (JP09-084311**, submitted in IDS).

Crowell discloses the claimed invention, except for the added limitations of claim 11.

Kajiwara, however, teaches that for the purpose of enabling to moderate the bending stress to the centrifugal force generated at the rotor conductor, the radial end regions of the conductor (9) being removed by trimming away material of the squirrel-cage rotor conductors at radial end region (see figure in Abstract).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the method of fabricating the squirrel-cage rotor of Crowell by adding the step of trimming away material of the squirrel-cage rotor conductors at radial end region, as taught by Kajiwara. Doing so would further reduce bending stress of the conductor bar.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N. Nguyen via **email** at **Tran.Nguyen@USPTO.gov**

The applicant is advised that ALL communications via email are UNOFFICIAL. Emailing is only for establishing initial contact with the Examiner.

If the Applicant needs to request an Official Interview, please email to inform the Examiner and an Official Interview will be scheduled accordingly.

If attempts to reach the examiner by email and/or telephone are unsuccessful, the Examiner can be reached via email. If attempts to reach the examiner by telephone or email are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on 571-272-8188. The

fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. (Note: **Use this Central Fax number 571-273-8300 for all official response**.)

Do **not** use the Examiner's RightFax number without informing the Examiner first because, according to the USPTO policy, any document being sent via RightFax is treated as unofficial response and will not be officially dated until it is routed to the Central Fax.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tran Nguyen/
Primary Examiner, Art Unit 2834